

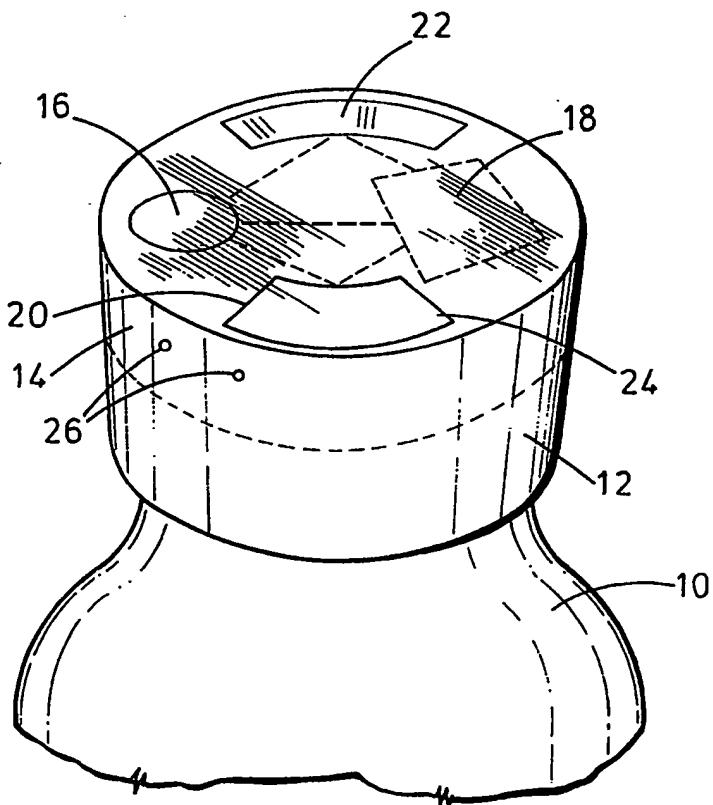
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(30) Priority data (31) 9205823 (32) 18.03.1992 (33) GB	(56) Documents cited GB 2253287 A GB 2186273 A GB 2123585 A US 4367955 A PACKAGING March 1990, Technology Caps New Closure Ideas
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## (54) Container cap with alarm

(57) A cap (12) for a container (10), especially a medicine container, has means (22, 24) for indicating an alarm condition associated with the container or its contents such as, for example, that a dose of medicine is due to be taken or that the container has been opened without permission. The cap may be a cover for a closure. The alarm conditions may be indicated by an audible signal or a visual signal, eg a liquid crystal display or a light emitting diode, or by vibration of the cap or a part associated therewith. Pin sized control buttons (26) may be provided for controlling a timer of a circuit including a micro-chip (18) and a battery (16) positioned in a compartment (14) of the cap.

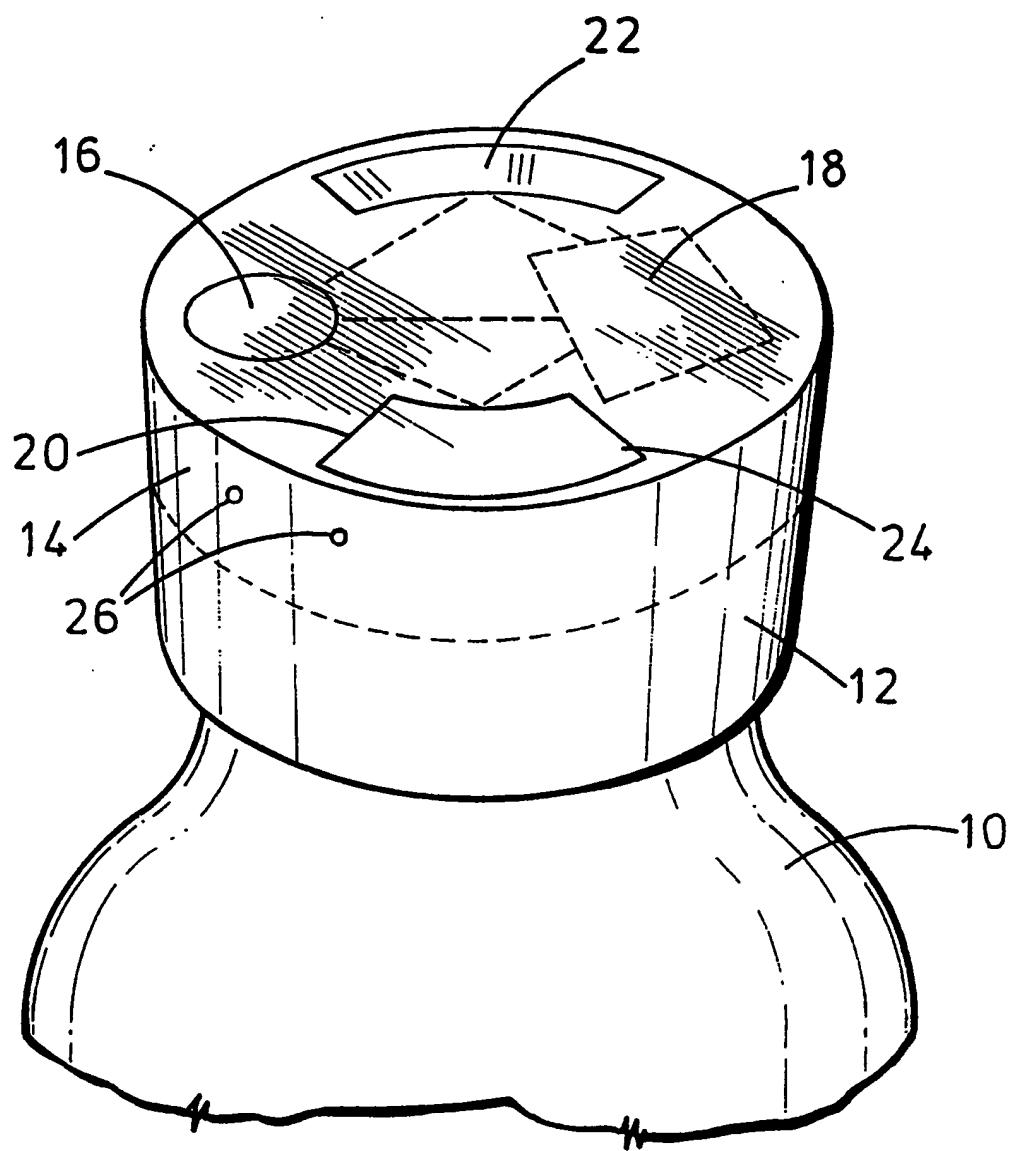


At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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Title: Containers

DESCRIPTION

The present invention relates to containers, particularly but not exclusively medicine containers.

5 A large proportion of the population have to take medicine on a regular basis to sustain their quality of life, such as, for example, the very elderly, diabetics and long term illness patients. That is in addition to those prescribed medicines for relatively shorter 10 periods. In common with most medicines is the need for doses to be taken at regular intervals. That need should be strictly adhered to for most medicines to have their optimum effect. However, it is not uncommon for the taking of a dose of medicine to be overlooked or for 15 it to be taken at the wrong time.

Another problem associated with medicine containers is the possibility of young children opening a container undetected and swallowing tablets or liquid medicines causing them harm. It would be advantageous 20 to have a warning when a medicine container is opened without permission. The same problem is also prevalent in connection with dangerous substances used in the home, such as bleach.

Also, in general if containers storing, for

example, volatile liquids are left open by accident, the volatile liquid can evaporate. Examples of volatile liquids in general use include paint and paint thinners.

One object of the present invention is to provide 5 a medicine container with a means of reminding when a dose of medicine should be taken.

Another object of the present invention is to provide a container with means for indicating undesired or unauthorised opening of the container.

10 According to the present invention there is provided a container associated with alarm means for indicating when contents of the container, for example, medicine, should be taken and/or when the container has been opened.

15 In a preferred embodiment of the invention said means for indicating is associated with a cap for the container. A preferred means for indicating comprises means for emitting a signal when a dose of medicine is due to be taken and/or when the cap has been removed 20 from the container. The signal emitted may be audible and/or visible. An additional or alternative signal may be vibration of the cap which may be detected by touch, which would be particularly useful for a partially deaf user.

25 The indicating means is preferably battery powered. The battery may be replaceable or may be

sealed into the cap at manufacture.

In one preferred embodiment said indicating means is programmable whereby desired intervals at which a dose of medicine should be taken may be set, for example, by a dispensing pharmacist. Alternatively, different caps, say colour coded, may be provided preset for different time intervals. The latter may eliminate the possibility of error by the pharmacist in setting the intervals.

In a specific preferred embodiment of the invention a cap for a medicine container has a programmable timer, a power supply, such as a battery, and an audible alarm emitter and/or a visual alarm display, such as a liquid crystal display or a light emitting diode display. The audible alarm may emit any suitable signal, such as a continuous tone or an interrupted tone. The visual display may provide a continuous display but preferably will be arranged to provide a flashing display.

In another preferred embodiment of the invention said indicating means is arranged to be activated upon removal of the cap from the container. This arrangement may be additional to means for indicating when a dose of medicine should be taken or may be provided as a single function. The indicating means in this embodiment is preferably primed by the action of fitting a cap onto

the container. When the cap is removed a preferably continuous audible signal is emitted, which is preferably only stopped by replacement of the cap on the container.

5 The cap according to the invention may be a closure for a container or may be a cover for a closure. The cover is preferably arranged so that it must be removed before the closure can be removed, so ensuring that the indicating means is activated by removal of the  
10 cover.

The components for the indicating means may conveniently be located in a compartment of a cap for a container and the cap itself be of a child-proof type. The compartment is preferably sealable to avoid  
15 tampering or to avoid corrosion or degradation of its contents by vaporised container contents. Controls for the indicating means are preferably of the pin-sized type used in digital watches and which may be provided flush with an outer surface of the cap.

20 Provision of medicine containers with means for indicating when a dose of medicine is to be taken, whether it be in the form of a liquid, tablets or powders, could have the advantage of patients taking doses of medicine at correct intervals and hence  
25 improve rates of recovery from illness.

Provision of containers with means for indicating

opening thereof, especially undesired opening thereof, may be useful for containers of product other than medicines to be taken in doses, such as non-prescriptive drugs eg aspirin and dangerous liquids eg bleach to prevent unauthorised removal of contents and volatile liquids, solvents and thinners to prevent waste thereof.

This invention will now be further described, by way of example only, with reference to the accompanying drawing, which shows a medicine bottle having a cap with means for indicating when a dose of medicine is to be taken.

Referring to the accompanying drawing there is illustrated a medicine bottle or container 10, which may contain medicine in any form and may be of plastics or glass, having a cap 12, which may be a conventional screw cap and/or may be of a tamper-proof type to prevent children obtaining unsupervised access to the medicine. It will be clear from the above that the type of container and the type of cap are generally immaterial to the invention.

The cap 12 has a compartment 14 formed therein which compartment houses a battery 16 as power supply for circuitry including a programmable micro-chip 18 and a timer 20. The circuitry also includes an audible alarm signal emitter 22 and a liquid crystal display 24 for a visual signal. Pin holes 26 in the side of the

cap 12 provide access to push button controls for start/stop/timer set functions. Alternatively a single pin hole push button may be provided to control all required functions.

5 In one form the cap will be programmable for different time intervals say 2, 4, 6 or 8 hourly intervals, so a visible signal, such as intermittent flashing of the L.C.D display, and/or an audible signal, such an intermittent tone, are produced for a pre-set 10 period of time at the end of each interval.

In an alternative form, caps may be provided that are already programmed for set intervals, say 2, 4, 6 or 8 hours, the cap for each interval type being of a different colour to the others, and requiring only 15 start/stop functions. Again, audible and/or visual alarm signals may be produced by such a cap.

The cap may also be arranged and programmed to emit an alarm signal when it is removed from the container.

## CLAIMS

1. A cap for a container, the cap having means for indicating an alarm condition associated with the container or its contents.
- 5 2. A cap as claimed in claim 1 in the form of a closure for the container.
3. A cap as claimed in claim 1 in the form of a cover for a closure of the container.
4. A cap as claimed in claim 3, wherein the cover is  
10 arranged to be removable before the closure may be removed from the container.
5. A cap as claimed in any one of claims 1 to 4, wherein the alarm condition is undesired removal of the cap.
- 15 6. A cap as claimed in any one of claims 1 to 5 wherein the alarm condition is to indicate when contents of the container should be removed.
7. A cap as claimed in claim 6, wherein the container is a medicine bottle and the means for  
20 indicating is programmed to indicate when a dose of medicine is to be taken.
8. A cap as claimed in any one of claims 1 to 7, wherein the means for indicating comprises means for emitting a signal.
- 25 9. A cap as claimed in claim 8, wherein the signal

is audible and/or visible.

10. A cap as claimed in claim 8, wherein the signal is vibration of the cap or a part of or associated therewith.

5 11. A cap as claimed in claim 1 having a programmable timer, a power supply and an audible alarm emitter and/or a visual alarm display.

12. A cap as claimed in claim 11 wherein the visual alarm emitter is a liquid crystal display or a light 10 emitting diode.

13. A cap as claimed in claim 11 or 12, wherein the audible alarm emitter emits a continuous tone signal.

14. A cap as claimed in claim 11 or 12, wherein the audible alarm emitter emits an interrupted tone signal.

15 15. A cap as claimed in any one of claims 1 to 14 having one or more pin-sized control buttons.

16. A cap for a container substantially as hereinbefore described with reference to and as illustrated in the accompanying drawing.

**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

**Application number**

GB 9305580.4

**Relevant Technical fields**

(i) UK CI (Edition L ) B8T (TWB) ; G3T (TS2)

(ii) Int CI (Edition 5 ) G04B 47/00, 47/02;  
B65D 55/00, 55/02

**Search Examiner**

LINDA HARDEN

**Databases (see over)**

(i) UK Patent Office

(ii)

**Date of Search**

20 APRIL 1993

**Documents considered relevant following a search in respect of claims 1-16**

<b>Category (see over)</b>	<b>Identity of document and relevant passages</b>	<b>Relevant to claim(s)</b>
X, P	GB 2253287 A (A C JENKINSON) 02.09.92 - entire document relevant	1-3, 6-9, 12-15
X	GB 2186273 A (D INSTANCE LTD) - entire document relevant	1-5, 8-14
X	GB 2123585 A (AMERICAN CYANAMID CO) - see in particular Figure 2	1, 2, 6-14
X	US 4367955 (BALLEW) - see in particular Figure 3	1-3, 6-16
X	PACKAGING March 1990, Technology Caps New Closure Ideas	1-16

Category	Identity of document and relevant passages	Relevant to claim(s)

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